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AUTHOR Mikulecky, Larry
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ABSTRACT

Six workplace literacy programs were evaluated for impact upon learners, learners' families, and learners' productivity. Site 1 was an automotive plant where learners were involved in technical preparation, the General Educational Development program, and English as a Second Language (ESL). Site 2 was a wood-processing plant with a communication and collaboration course. Site 3 was a women's prison where correctional officers and other staff were in courses on report writing and promotions support. Site 4 was an insurance industry where learners worked in job-related reading and writing courses. Site 5 was a hospital where employees attended a computer-based writing class. Site 6 was a large gasket-making plant where learners attended reading and writing classes. The following are some results of evaluation of data, using the Workplace Literacy Impact Model: (1) Site 1 learners made gains in both the quantity and quality of their reading and writing and ESL learners also became more willing to ask questions at work; (2) site 2 supervisor rating scales showed learners increased their ability to solve problems, communicate, and handle paperwork and other plant-specific areas; (3) site 3 learners increased the quantity and quality of their reading and writing and showed gains in supervisor ratings of job competencies; (4) site 4 learners made gains in their perceived ability to read paperwork from management; (5) site 5 learners demonstrated significant increases in several types of home reading. (CML)

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# Workplace Literacy Programs: Variations of Approach and Limits of Impact

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Larry Mikulecky
Indiana University-Bloomington

National Reading Conference
San Antonio, TX
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During the past two years, six workplace literacy programs have been evaluated for impact upon learners, learners' families, and learners' productivity using the Workplace Literacy Impact Model developed for the National Center on Adult Literacy. Several worksites offer a variety of classes (i.e. literacy integrated with technical training, ESL training, general basic skills instruction, family literacy training, and GED training). It has been possible to compare the impact of 10 different program and class types on changes in learner literacy beliefs, practices, processes and abilities, plans, and productivity in the workplace. More information on the Workplace Literacy Impact Model is available in Mikulecky and Lloyd (1992). Though analysis of data continues, it is now possible to make useful observations about the sorts of learner gains which can be expected from different program types.

At each site, a combination of shared interviews and questionnaires along with custom-designed measures were used to assess the effect of the literacy courses on learners' own literacy behaviors, that of their families, and on their work competency. To assess impact on learners, Lytle's (1990) adult literacy assessment framework (i.e. beliefs, practices, process, and plans) was used to structure measurement of learner change. Interview, questionnaire,



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job performance ratings, and employer data on attendance, grievances, and productivity suggestions produced up to 300 pieces of information upon each subject.

**Programs**

Site 1 is a large, unionized manufacturing plant. Subjects were the learners in three classes conducted at the site:

Technical Preparation — a 6 week, 7 hours per day course designed to prepare employees for subsequent technical training;

GED — meeting for 4 hours per week over 6 weeks;

ESL — meeting for 8 hours per week over 6 weeks.

For the first of these, there was a control group, made up of workers who had not yet begun the Technical Preparation course. Each of the four groups consisted of 12 - 15 employees.

Site 2 is a small wood processing plant. Subjects were the learners in a course entitled Communication and Collaboration — designed to train a group of employees involved in one phase of the firm's operation to work cooperatively as a self-directed team, making their own decisions on day-to-day matters. Two classes of size 10 - 12 were being conducted.

Site 3 is a women's prison. Subjects were correctional officers and other staff in three classes conducted at the site:

Report Writing — 28 staff were in class 3 hours per week for 12 weeks, learning how to improve the quality of the reports that they need to write as an integral part of

their work;

Promotions Support — 9 staff spent 3 hours per week for 6 weeks in enhancing the skills they need to apply for promotion, including preparation for a promotion test;

Family Literacy — 6 staff met on an informal basis over four months to improve their own literacy skills while helping their children at home.

Site 4 is an insurance industry, where a group of 20 learners worked to improve skills in job-related tasks connected with reading and writing. Some attended class for 20 hours and completed a similar amount of work outside class, while others worked with self-study packages supplemented by individual help sessions with an instructor. All were engaged in their studies for about 40 hours in total.

Site 5 is a hospital providing a basic skills program to 20 service employees who attended a computer-based writing class for 20 hours. They were learning the basics of word-processing and, at the same time, working on their writing and problem-solving skills. Reading materials included magazine articles related to the health professions while writing tasks involved organizing memos to solve problems and explain situations related to the hospital workplace.

Site 6 is a large gasket-maker, where pre-test data has been gathered on 30 learners attending basic reading and writing classes. Learners attended two 30 hour basic skills classes over a period of 20 weeks. Classes integrated basic skills with job related activities identified through literacy task analyses.

**Results**

Results are considered below under the general categories of Learner Practices, Learner Processes and Abilities, Learner Beliefs and Plans, Family Literacy, and Employer Objectives. Unless stated otherwise, improvements mentioned here were statistically significant.

Site-1 Automotive

**Learner Practices:** Learners in the Technical Preparation class, but not its control, made gains in both the quantity and quality of their reading and writing away from work, and in their willingness to take part in team meeting discussions at work. These results are explained by the fact that, despite its title, this class spent much of the time on general reading and on discussion among team members in the class. The ESL learners made gains in the quantity and quality of their reading and writing at work, and in their willingness to ask questions when they needed to know something at work.

**Learner Processes and Abilities:** When answering questions about job-related scenarios based on a plant newsletter article, an inventory graph and a job instruction sheet, learners in all classes made gains, but at different levels. The Technical Preparation learners made gains on the most difficult questions (requiring inference and interpretation), while the GED and ESL learners gained on those of medium difficulty. The learners were also asked to describe how they went about reading the prose article, and here the GED and ESL classes made gains in the

sophistication of their reading strategies. A cloze test based on a plant newsletter article was also given to each group, and here the Technical Preparation class made gains, whereas its control group did not, despite similar pre-test scores. The GED and ESL classes had much lower pre-test scores and did not make any gains; it appears that the newsletter article was too difficult for them.

**Learner Beliefs and Plans:** The learners in the Technical Preparation class, but not in its control group, made gains in their views of themselves as being literate. They also improved in the definiteness and detail of their educational plans for the next year and five years. The ESL learners gained in their references to reading and education as part of their future plans. Both classes included discussions in these areas, and the greater gains of the Technical Preparation class can be attributed to the considerably longer time these learners spent in class.

**Family Literacy:** Measures of parental literacy interaction with their children showed no significant gains for the GED and ESL groups. (The Technical Preparation class contained very small numbers of parents.) There were some numerical gains in the frequency of literacy activities, but it appears that such changes may be slower to take effect than the time-scale of this study. Interview comments indicated that parents were moving toward more literacy activity with their children. No direct class instruction addressed family literacy.

**Employer Objectives:** For all groups, numbers of absences, accidents and suggestions were too small to allow meaningful

analysis; the figures for a few individuals often affected totals quite markedly. Results from supervisor ratings of job competencies produced anomalies that cast doubt on the consistency of these ratings from pre-test to post-test: some of the ratings appeared to be carelessly done, with a number of workers being scored exactly the same on all scales.

Site-2 Wood products plant

At this site, only a limited amount of data could be gathered and so not all the categories of results are covered below.

**Learner Practices:** Learners made gains in their willingness to ask questions when they needed to know something at work. This relates to the emphasis in the Communication and Collaboration class on acquiring the confidence to work cooperatively with others.

**Employer Objectives:** Supervisor rating scales showed very significant gains for this group in ability to solve problems, communicate, handle paperwork and a variety of other plant specific areas. Scales related to both job skills and course objectives. In addition, only two supervisors were needed to make the ratings and made them for the same workers in both pre-test and post-test.

**Site-3 Women's Prison**

**Learner Practices:** Learners in the Report Writing class made gains in the quality of their reading and writing both at work and away from work. For example, in their work, they were reading memos and writing reports more frequently than before the class.

**Learner Processes and Abilities:** Learners in the Report Writing and Promotions classes answered questions about job-related scenarios based on prose passages taken from training materials, and a chart and document about disciplinary offenses. Learners in both groups made gains, mainly on the most difficult questions (requiring inference and interpretation). They were also asked to describe how they went about reading each item, and for the prose article the Report Writing group made gains in the sophistication of their reading strategies. A cloze test based on training materials was also given to each group, and both made gains here also.

**Learner Beliefs and Plans:** Learners in the Report Writing and Promotions classes made gains in their views of themselves as literate. They also improved in the definiteness and detail of their educational plans for the next five and ten years. Both classes included discussions in these areas, particularly in relation to their future within the organization.

**Family Literacy:** The six participants in the informal Family Literacy strand were interviewed in depth about changes in their behavior toward the literacy of their children. Although this group was too small for statistical analysis, there was some evidence of an increase in literacy interaction with their children and in parent modeling of literacy activities.

**Employer Objectives:** The Report Writing class showed increases in attendance from a period of one month before the class to one month after the class. For this measure, a control group was

available, and this group showed a decrease in attendance over this period. The Report Writing class also showed gains in supervisor ratings of job competencies, particularly in the area of paperwork—the focus of instruction in this class. In a simulated report-writing scenario, this class made substantial gains in their ability to describe an incident with clarity and full details. And, from a sample of actual on-the-job reports, it appears that the class also made gains, although results here are less clear because of sampling problems: the number of reports written by any individual fluctuates considerably over time depending on their shift and responsibilities, and report drafts are corrected by supervisors, making it difficult to obtain the original work of the officer. After their course, which was aimed specifically at increasing opportunities for promotion, members of the Promotions class achieved results in various tests that were well above the norms for those tests.

Site-4 Insurance

**Learner Practices:** Learners in this reading and writing class made gains in their perceived ability to read paperwork from management, which seems to be an effect of the emphasis on job-related materials during instruction. Learners made no gains in the quantity or frequency of their reading and writing practices, but their levels of activity in these areas was already higher than learners from other programs in the study.

**Learner Processes and Abilities:** Learners answered questions about job-related scenarios based on a company newsletter article,

a graph about claims processing, and a chart of medical benefit schemes. They made gains on the article and graph scenarios: for the article on more difficult questions (requiring inference) and for the graph on fact-level questions. They were also asked to describe how they went about reading each item, and for the prose article and the chart they made gains in the sophistication of their reading strategies. A cloze test based on another newsletter item was also given to the group, and they made gains here also.

**Learner Beliefs and Plans:** Learners made no gains in their views of themselves as literate or in the definiteness and detail of their educational plans. Since the group concentrated on individual work and self-study, there was little or no discussion in the areas of beliefs and plans.

**Family Literacy:** Learners reported an increase in the incidence of their children seeing them reading and writing (presumably because of the work they were doing outside class), and there were also non-significant increases in reading with children and helping them with school work. Because only nine parents responded to the family literacy questions, it may be that a larger sample would have produced more significant gains.

**Employer Objectives:** Learners were directed toward this class if they had achieved at a low level on a company "Selection Test". Some of them took that test again after the class, and 8 out of 11 performed better the second time, 7 of these moving from a marginal or unacceptable rating to one of "clearly acceptable". In addition, all class participants were pre-tested and post-tested on

material similar to the Selection Test, and made very significant gains.

Site-5 Hospital

**Learner Practices:** Learners demonstrated significant increases in several types of home reading (i.e. books and magazines as well as functional reading like shopping lists and supply labels).

**Learner Processes and Abilities:** Learners employed more sophisticated reading strategies while reading a hospital newsletter. In addition, total reading comprehension scores on the newsletter scenario improved. This was due, primarily, to increases in performance on the more difficult inference and application questions. Similar gains were apparent on total comprehension scores on a scenario task involving reading a procedure chart on cleanliness procedures. Again gains were made on the more difficult inference and evaluation procedures. Similar gains were not apparent on the chart reading scenario. Class instruction mainly addressed the reading and writing of prose. This is where gains occurred.

**Learner Beliefs and Plans:** Learners made gains in their beliefs about their own literacy abilities and in the role that literacy and education played in their plans for the next year.

**Employer Objectives:** Learners demonstrated significant improvement on a variety of supervisor ratings. These include: use of equipment, using safety precautions, following proper procedures for infection control, diluting chemicals properly,

communicating at meetings, and making suggestions to supervisors. This may be due, in part, to the attention of instruction to problem-solving, organizing thought, and constructing memos to explain one's self.

Site-6 Gasket maker

Data analysis from this site is still being performed at this time.

**Conclusions**

The results described above indicate what can be expected of effective workplace literacy programs. Instruction has produced some improvement in all of the areas assessed, but not for all programs. There is a pattern of gains being generally limited to areas directly addressed by instruction. Programs which spent time discussing the relevance of literacy and education tended to elicit changes in these areas. Programs which used workplace materials tended to have students improve in the use of those materials and in literacy related job performance. If instruction was limited to job related prose literacy, improvement would occur with prose materials but not charts or graphic materials. There are a few exceptions to the pattern of very limited transfer, but not many.

Observations about transfer need to be viewed somewhat cautiously. Data were collected primarily to test the workplace literacy impact model. No extensive observations of instruction were made. Class descriptions are based upon examination of curriculum materials and discussions with instructors. Still,

some suggestions for programs may be in order.

There seems to be little or no transfer of learning into areas not covered by instruction. Because of this, it appears that program providers need to have clear goals for what they want to achieve in the limited time (usually less than 100 hours) that learners are in class. They should also be seeking ways to extend learning and practice time beyond the classroom. One way of doing this is to use on-the-job materials in class so that learners are more likely to continue practicing on the job. Also, encouraging learner motivation and independence is likely to lead to learners' engaging more often in literacy-related activities. The insurance program actually prepared take home packets which doubled learning time and appeared to have some impact upon family literacy. Instructional decisions need to be made in recognition that two major constraints in workplace literacy programs appear to be extremely limited instructional time and the fact that instruction received in 50-100 hours does not appear to transfer very far. Programs that address too many goals with limited resources are likely to fail as are programs that assume teaching in one area will transfer to several other areas.

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